Appliance Documentation

ICN 3056/3066 from Index 20

Combined fridge-freezer for integrated use

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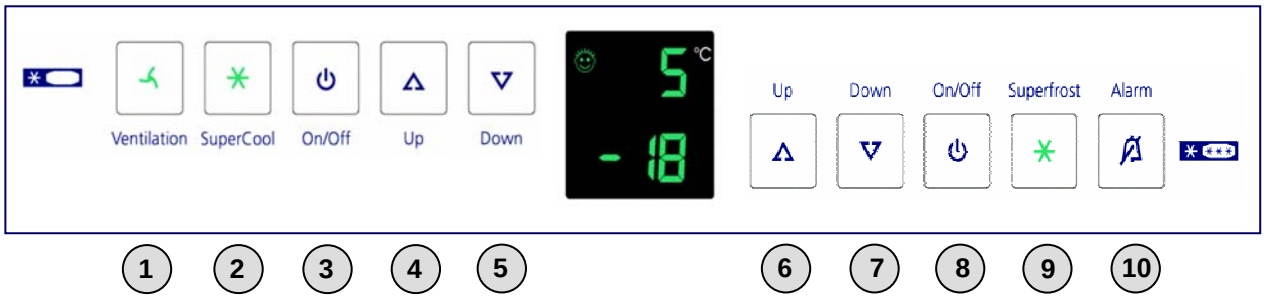
1.0 Operating and control elements



Refrigerator compartment	Freezer compartment
1 : Ventilation function , button lit = function switched on. **2 : SuperCool function**, button lit = function switched on. **3 : OnOff button** **4 : Setting button** temperature **higher** **5 : Setting button** temperature **lower**	**6 : Setting button** temperature **higher** **7 : Setting button** temperature **lower** **8 : On/Off button** **9 : SuperFrost function** button lit = function switched on **9 : Alarm off button** for audible alarm

2.0 Functions at a glance

Control:	Electronic control system	
Temperature display:	Refrigerator compartment: Freezer compartment:	Actual value Actual value
Temperature range:	Refrigerator compartment: Freezer compartment:	+2°C to +11°C -16°C to -26°C
Temperature alarm:	Refrigerator compartment: Freezer compartment:	Not fitted Visual and audible
Door alarm:	Refrigerator compartment: Freezer compartment:	Audible Audible
Fan:	Refrigerator compartment: Freezer compartment:	Fitted Fitted
Defrosting:	Refrigerator compartment: Freezer compartment:	Automatic Automatic
Interior light:	Refrigerator compartment: Freezer compartment:	Fitted Not fitted
Service menu:	Present	
Compressor:	Standard	
Solenoid valve-refrigeration circuit:	Present	

3.0 Description of the appliance

The **ICN 3056/3066** appliances are combined fridge-freezers for integrated use with a foamed-in refrigerator compartment rear wall evaporator and a NoFrost freezer compartment. The appliances are prepared for installation with a door-on-door system and are equipped with a soft stop function.
The temperature in the refrigerator compartment is controlled by an air sensor and an evaporator sensor.
The temperature in the freezer compartment is controlled by an air sensor and an evaporator sensor.

The refrigerator and freezer compartment evaporators are activated via a bi-stable solenoid valve. The two evaporators are connected in series (**see schematic diagram 4.2.4**). Therefore the refrigerator compartment can be operated only in conjunction with the freezer compartment. However, it is possible to operate the freezer compartment on its own.

3.1 Sensor positions, schematic diagrams

Fig. 3.1/ 1: ICN 3066

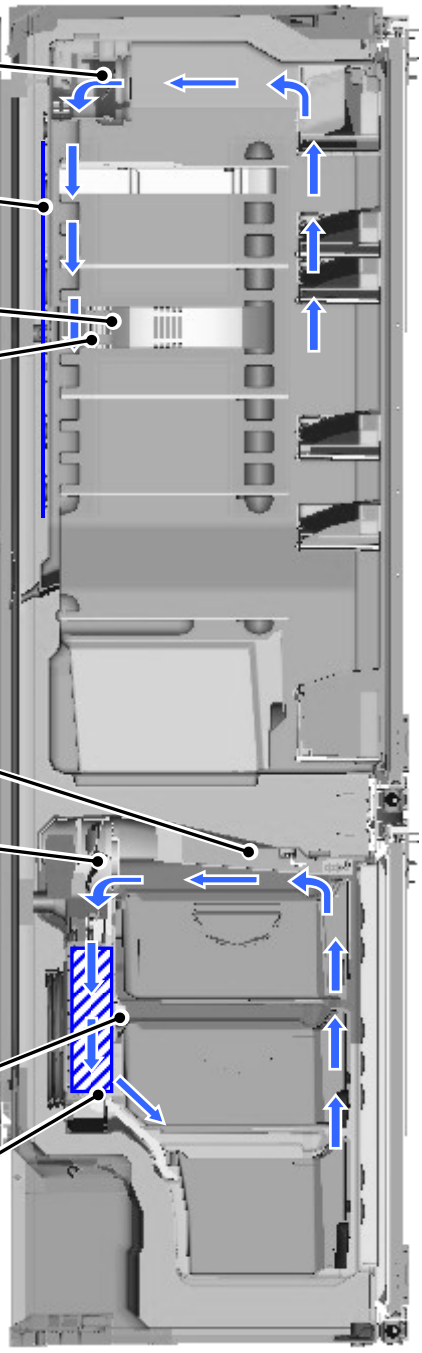


Fig. 3.1 / 2: ICN 3066

4.0 Main components and their functions

4.1 Electrical components and functions

4.1.1 General

Electronic control system	
Type:	Series 6 electronic control system
Components:	Control panel and power PCB
Compressor	
Type:	Standard compressor
Function:	**On:** refrigerator compartment evaporator sensor switch-on value or freezer compartment air sensor switch-on value Note: On-delay time (8 mins.) must have elapsed. **Off:** refrigerator compartment air sensor switch-off value and freezer compartment air sensor switch-off value
Solenoid valve refrigeration circuit	
Type:	Bistable
Function:	Switchover between REFRIGERATOR COMPARTMENT + FREEZER COMPARTMENT to FREEZER COMPARTMENT only

4.1.2 Refrigerator compartment

Electronic control system		
Setting range:	Refrigerator compartment:	+2°C to +11°C
Display range:	2°C to 50°C (actual value display) Temperatures equal to and lower than +2°C are displayed with 2°C.	
Functions		
SuperCool:	**SuperCool activated:** Refrigerator compartment sets itself for 6 hours to +2°C. **SuperCool deactivated:** The refrigerator compartment sets itself to the set value.	
Defrosting:	- Automatic if solenoid valve in position B “freezer compartment”. - Automatic during standstill phase of the compressor.	
Sensor		
Refrigerator compartment air sensor:	Position:	In light housing.
	Function:	- Freezer compartment air sensor and refrigerator compartment air sensor switch the compressor off. - Switches solenoid valve to position B (freezer compartment). - Generates the display value
Evaporator sensor:	Position:	In sensor holder on compartment liner rear wall.
	Function:	- Refrigerator compartment evaporator sensor or freezer compartment air sensor, switches the compressor on. - The solenoid valve is switched to position A (cooling + freezing). - Ends defrosting phase. - Activates the fan upon start-up from +12°C and less.
Switch		
Door switch:	Position:	In front panel.
	Type:	Reed PCB
	Contact type:	Make contact
	Function:	**Activation via:** magnet on the door, magnet is replaceable. **Switching signal when:** **door closed:** interior light off **door open:** interior light on fan off

Loads

Fan:

Position: Centre of liner ceiling.

Function:

Fan	Compressor	Door	Fan
ON	ON	CLOSED	**ON**
ON	ON	OPEN	**OFF**
ON	OFF	CLOSED	**OFF**
OFF	ON/OFF	CLOSED/ OPEN	**OFF**

e.g. if the ventilation button is ON **and** the compressor is ON **and** the door is closed, **then** the fan is **ON**.

During start-up the fan is activated only from an evaporator sensor temperature of +12°C and colder.

Refrigerator compartment interior light

Position: Inside right.

Function:
- Lights up as soon as door is opened.
- Is switched off after door has been open for 15 minutes.

4.1.3 Freezer compartment

Electronic control system	
Setting range:	-16°C to -26°C
Display range:	0°C to -50°C (actual value display) Values outside the range are indicated by a crossbar.

Functions	
Temperature alarm:	Alarm value: 4K warmer than set value SuperFrost alarm value: -12°C. Delay: 20 Min. Visual: Flashing temperature display. Audible: 4 beeps. During start-up: During start-up the temperature display flashes until switch-off value has been reached, the audible alarm is deactivated. (e.g. With a set value of -18°C, a temperature of –14°C must be present for at least 20 minutes, then a temperature alarm is raised). **When the defrosting phase begins, the temperature alarm is suppressed for 1.5 hrs.**
Defrosting:	The defrosting phase is started: - During start-up after 10 hours cumulative compressor running time. - After a cumulative compressor running time of 10 to 60 hours maximum, depending on the number/duration of the door openings. When the defrosting phase begins, the compressor and the fan are switched off and the defrost heater is switched on. The defrost heater remains switched on until - the freezer compartment evaporator sensor has reached +7°C or - a max. defrosting time of 40 minutes has been reached. After the end of the heating phase, the compressor is switched on with a 5 minute delay. If the SuperFrost function is activated during the defrosting phase, this will not interrupt defrosting.
Door alarm:	When: After the door has been open for 60 seconds. Audible: 3 beeps.
SuperFrost:	**SuperFrost activated:** Cooling of freezer compartment to -39°C (quantity-controlled, 30 - 65 hours). The appliance sets itself for at least 30 hours to -39°C. In the following 35 hours, after -39°C has been reached or a total time of 65 hours has elapsed, SuperFrost ends automatically. **SuperFrost deactivated:** The freezer compartment sets itself to the set value.

Sensor

Air sensor:

Position: Engaged in sensor holder in liner ceiling.

Function:
- Freezer compartment air sensor and refrigerator compartment air sensor switch the compressor off.
- Freezer compartment air sensor or refrigerator compartment evaporator sensor, switches the compressor on.
- Generates the display value

Evaporator sensor:

Position: Inserted into lamellar evaporator.

Function:
- Freezer compartment evaporator sensor and freezer compartment air sensor, switch the freezer compartment fan on.
- Ends defrosting phase

Switch

Door switch:

Position: In fan casing.

Type: Reed PCB

Contact type: Make contact

Function: **Activation via:**
magnet on the inside of the door is replaceable.

Switching signal when:

door closed:	fan	on
door open:	fan	off
	door alarm	on after 60 sec.

Loads

Fan:

Position: At top in middle of freezer compartment.

Function: **On:**
- compressor on **and**
- freezer compartment door closed **and**
- evaporator sensor switch-on value reached.

Switch-on value evaporator sensor:
a) During start-up / after defrosting phase: -25°C.
b) in normal operation 2K colder than freezer compartment air sensor.

On:
- compressor off **or**
- *Special case:* The refrigerator compartment air sensor is too warm and the freezer compartment sensor is at least 2K colder than the switch-off value. There is therefore more power available for the refrigerator compartment!

Defrost heater:

Position: Clipped into lamellar evaporator.

Function: Keeps the lamellar evaporator free of ice.
Control, see: Defrost function

4.2 Refrigeration components and functions

4.2.1 General

Compressor	
Compressor:	Standard compressor
Solenoid valve	
Solenoid valve:	Bistable

4.2.2 Refrigerator compartment

Evaporator	
Design:	Rear wall evaporator
Type of installation:	Foamed in
Injection point:	Top centre
Flow sequence:	see **4.2.4 Principle of operation of the refrigerating system**

4.2.3 Freezer compartment

Evaporator	
Design:	Lamellar evaporator
Type of installation:	Free-standing between air duct cover and compartment liner.
Injection point:	Top right on lamellar evaporator
Flow sequence:	see **4.2.4 Principle of operation of the refrigerating system**

4.2.4 Principle of operation of the refrigerating system

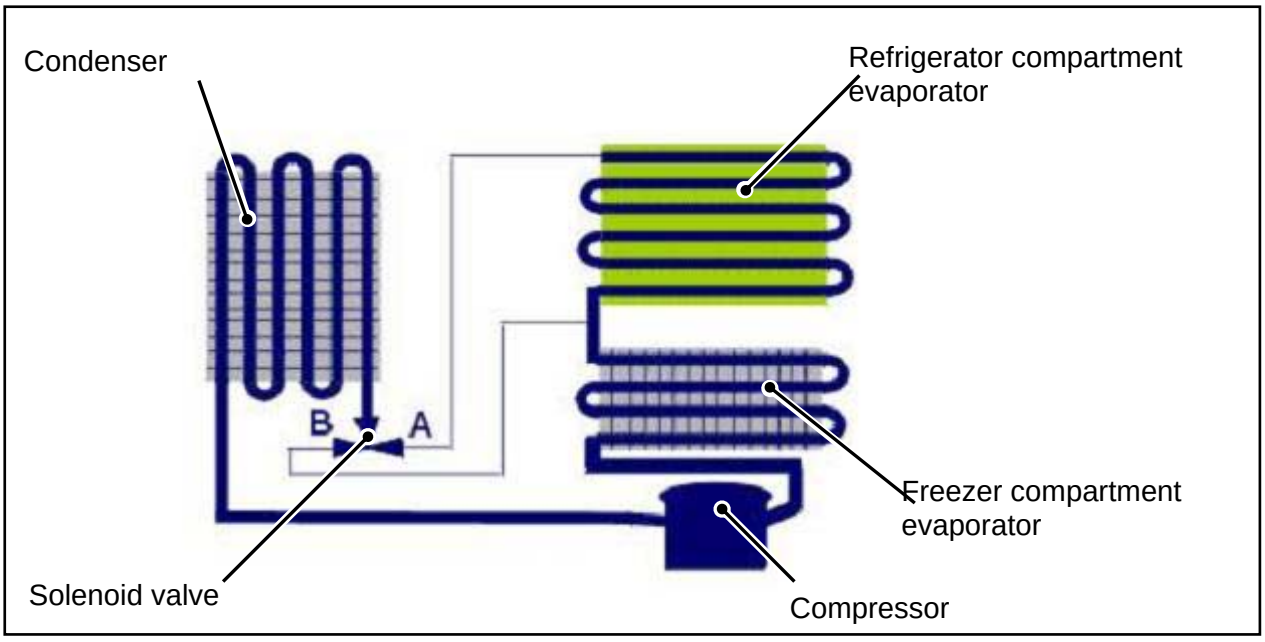


Fig. 4.2.4

5.0 Assembly instructions / replacement of parts

5.1 General

5.1.1 Electronic control system

Covers: Disengage covers at the marked points.

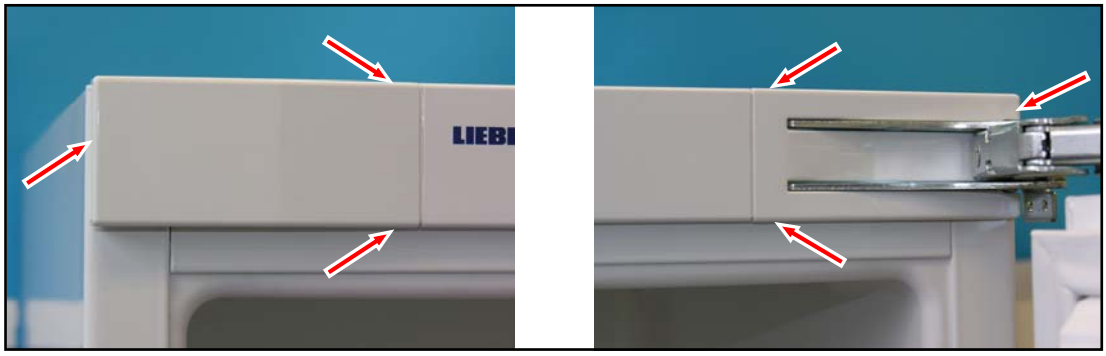


Fig. 5.1.1 / 1

Front panel: Unlock locating lugs at the left and right of the front casing.

Fig. 5.1.1 / 2

PCB carrier: Draw out front casing in a forward direction and uncover the cables.

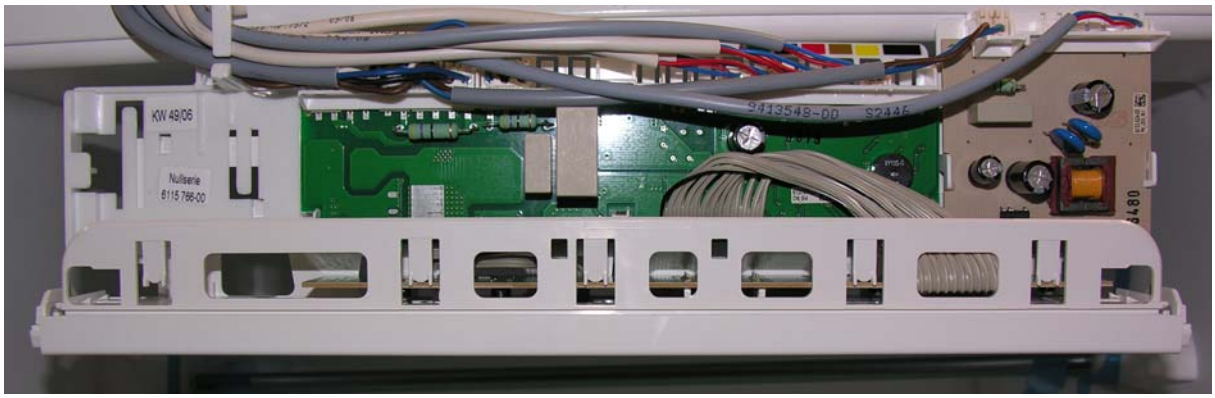


Fig. 5.1.1 / 3

Front panel: Release marked locks and remove front panel.

PCB carrier: Release marked locks and remove PCB carrier.

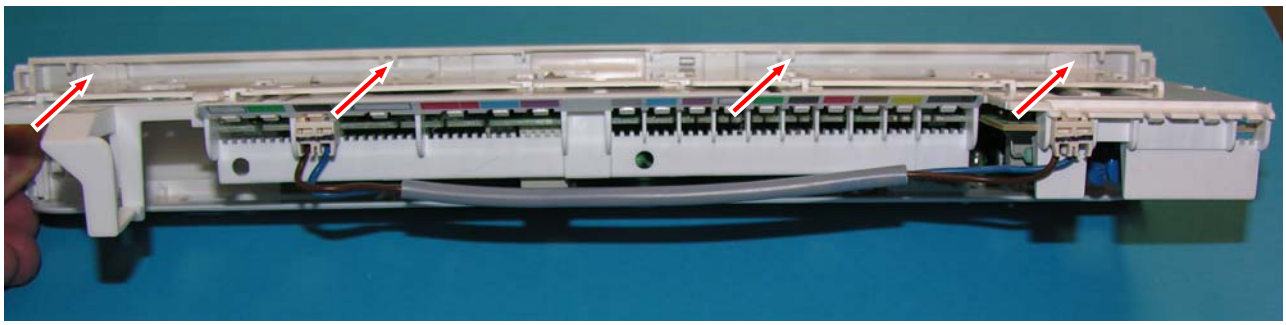


Fig. 5.1.1 / 4

PCB: Release marked locks and remove PCB. Release reed PCB with screwdriver and remove.

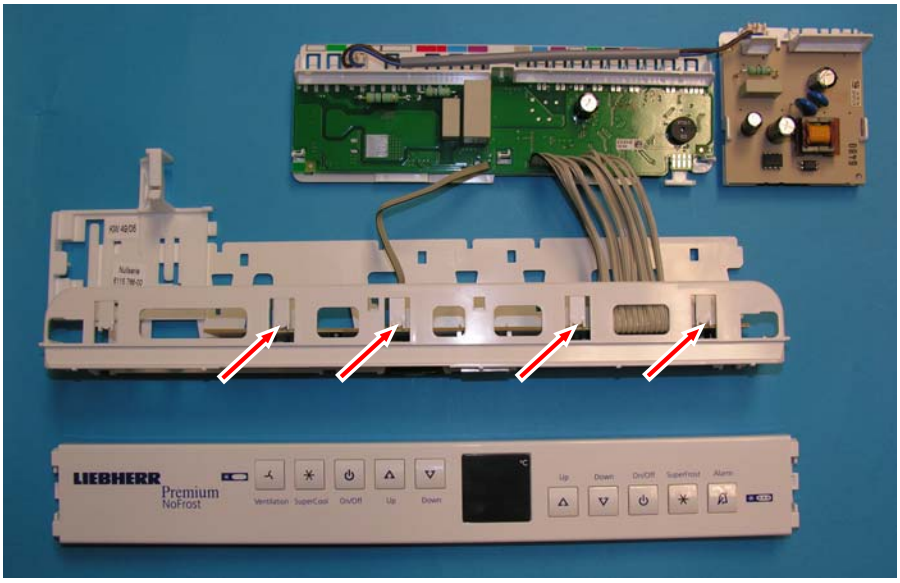


Fig. 5.1.1 / 5

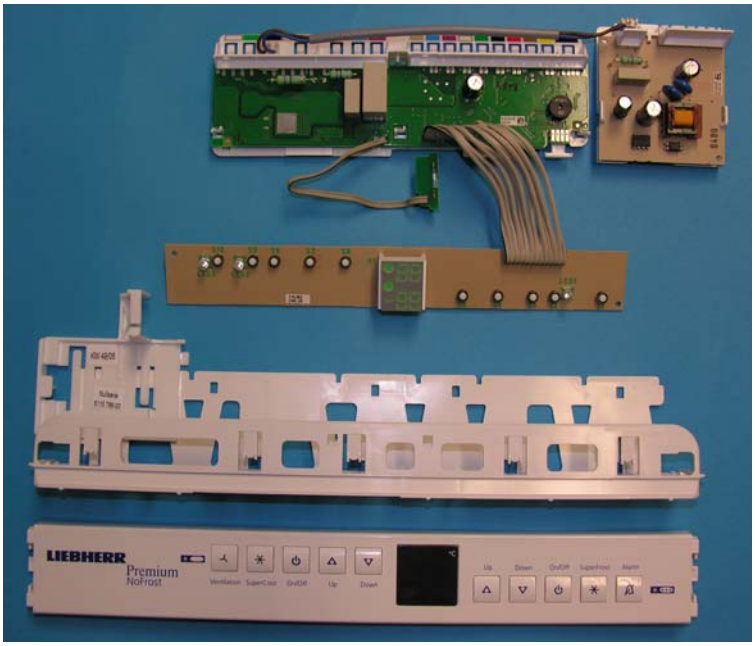


Fig. 5.1.1 / 6

5.1.2 Soft stop

Integrated on the doors, the SoftSystem cushions movement when the doors are closed. The door is closed automatically from an opening angle of approx. 30°.

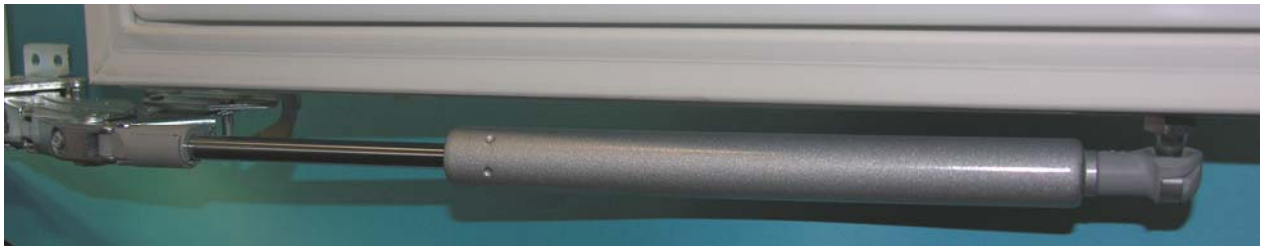


Fig. 5.1.2/ 1 Soft stop mechanism

Soft stop mechanism:

- Undo marked screw on hinge side and detach holder for soft stop mechanism.
- Lever off retaining clip with screwdriver and detach soft stop mechanism from spherical head.

Fig. 5.1.2/ 2 Screw hinge side

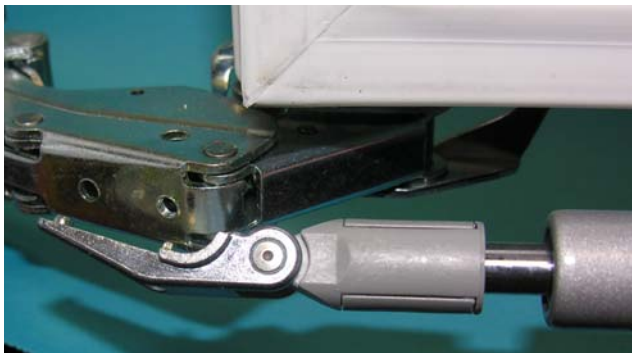


Fig. 5.1.2/ 3 Holder for soft stop mechanism

Fig. 5.1.2/ 4 Detaching soft stop mechanism from spherical head

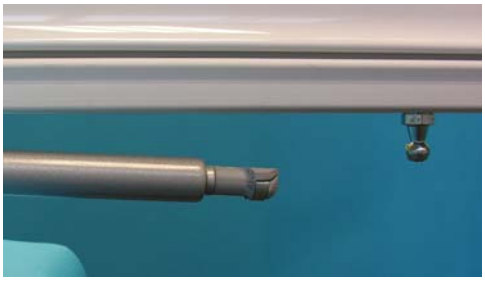


Fig. 5.1.2/ 5 Soft stop mechanism detached

5.1.3 Solenoid valve refrigeration circuit

Solenoid valve

- When detaching the capillaries, pay attention that they are properly re-connected.

Marking on solenoid valve cover:

KS : Capillary refrigerator compartment
GS : Freezer compartment capillary

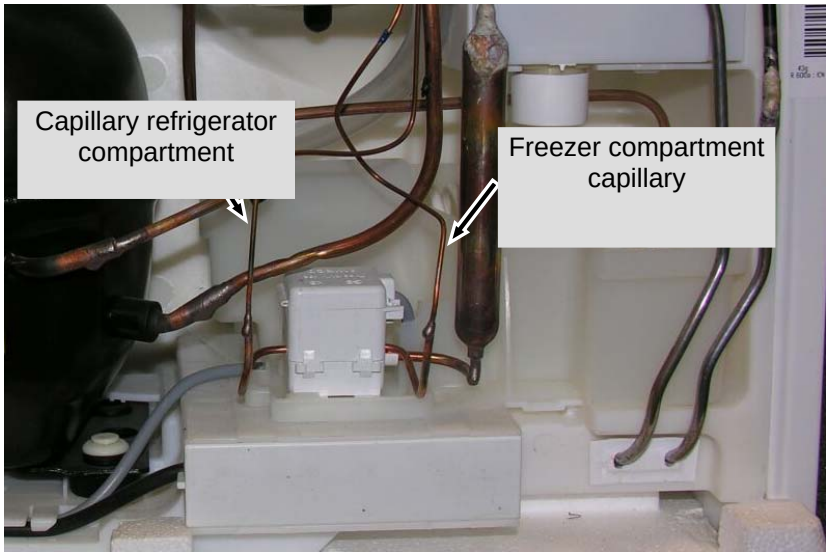


Fig. 5.1.3 / 1

5.2 Refrigerator compartment

5.2.1 Air sensor

Air sensor:

- First remove the evaporator sensor cover.
- Unlock the locating lugs of the light cover in arrow direction, using a short screwdriver (see **Fig. 5.2.1/ 1**).
- Unlock light housing at locating lug in arrow direction (see **Fig. 5.2.1/ 2**)
- Unclip air sensor from holder on back of light housing.

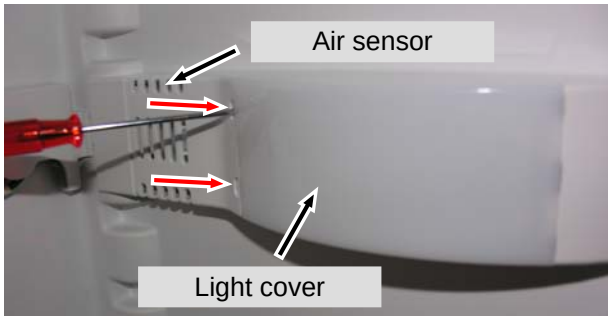


Fig. 5.2.1/ 1 Detaching light cover

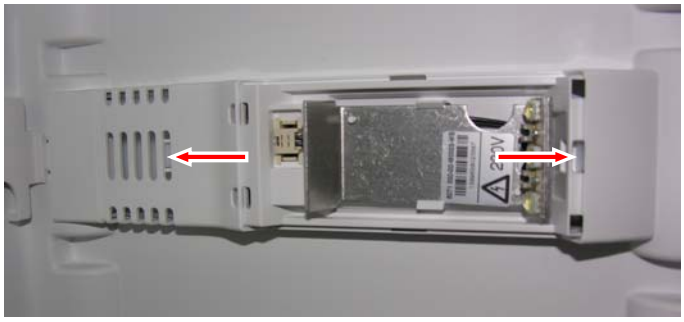


Fig. 5.2.1/ 2 Light housing locating lug

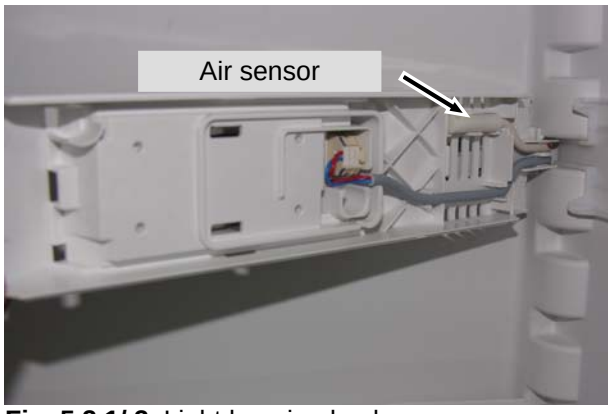


Fig. 5.2.1/ 3 Light housing back

5.2.2 Evaporator sensor

Evaporator sensor:

- Unclip evaporator sensor cover at the marked point and remove it.
- Undo screw of the evaporator sensor fastening (see **Fig. 5.2.2 / 2**)
- Unclip evaporator sensor from the fastening plate.

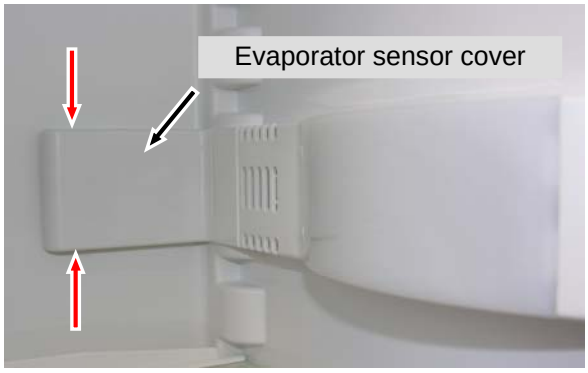


Fig. 5.2.2 / 1 Cover

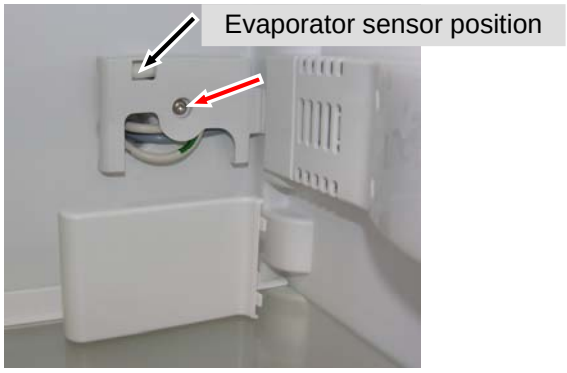


Fig. 5.2.2 / 2 Position

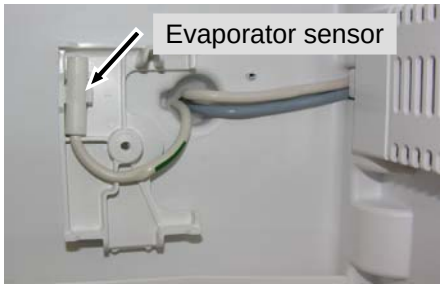


Fig. 5.2.2 / 3 Evaporator sensor

5.2.3 Fan

Fan:

- Undo marked screws.
- Disconnect fan cable.
- Release locating lugs of the fan cover and draw the cover forwards for removal.

Fig. 5.2.3 / 1

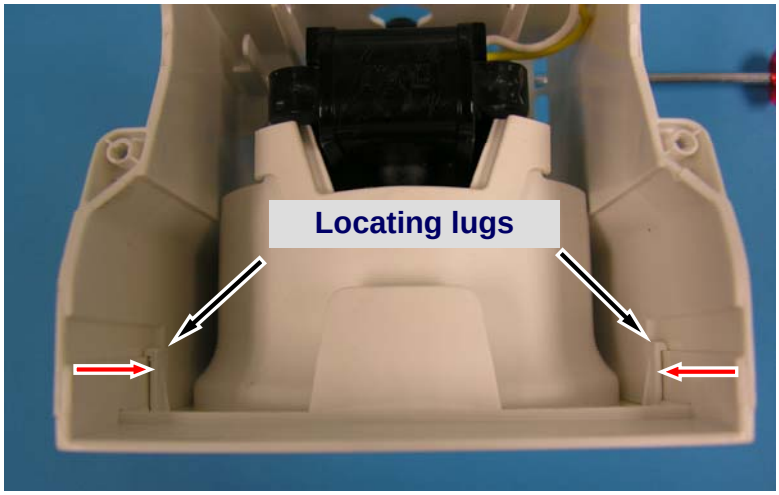


Fig. 5.2.3 / 2

5.2.4 Interior light

LED interior light:

- Remove evaporator sensor cover.
- Unlock the locating lugs of the light cover in arrow direction, using a short screwdriver (see **Fig. 5.2.1/ 1**).
- Unlock LED lighting unit at marked locating lugs (see Fig. **5.2.4/ 1**).
- Unlock connector in arrow direction (see **Fig. 5.2.4/ 2**)
- Unlock light housing at locating lug in arrow direction (see **Fig. 5.2.1/ 2**)
- Unlock connector coupling in arrow direction (see **Fig. 5.2.4/ 2**).

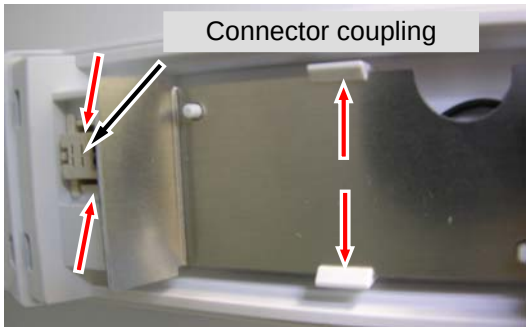


Fig. 5.2.4 / 1

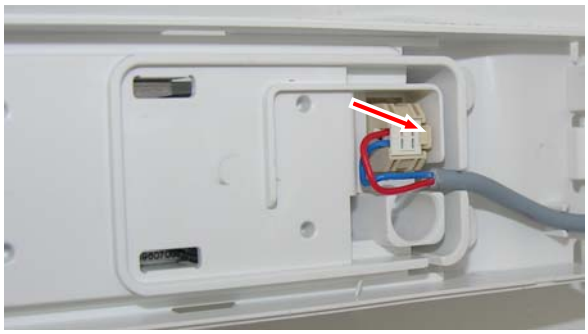


Fig. 5.2.4 / 2

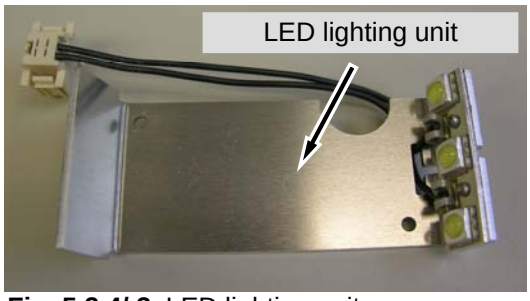


Fig. 5.2.4/ 3 LED lighting unit

5.2.5 Door magnet

Magnet holder: Press marked locating lugs together and detach magnet holder upwardly.

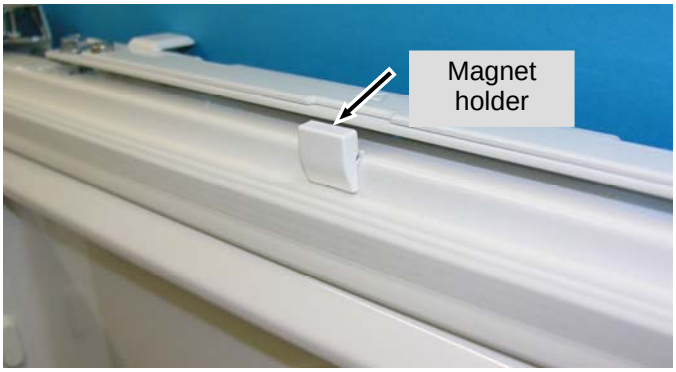


Fig. 5.2.5 / 1

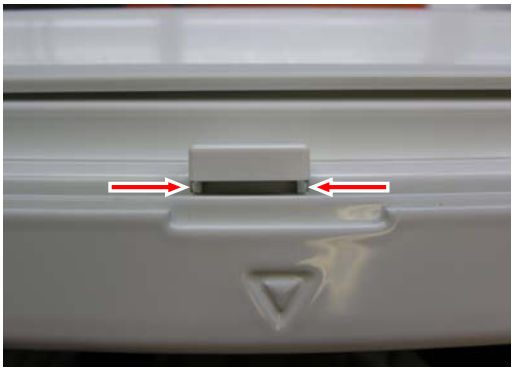


Fig. 5.2.5 / 2

5.2.6 Support rails for sectioned glass shelves

Rails: These plastic rails support the sectioned glass shelves. The marking **R** for right and **L** for left is impressed inside. The toothed profile has to rest against the underside of the supporting ribs of the compartment liner.

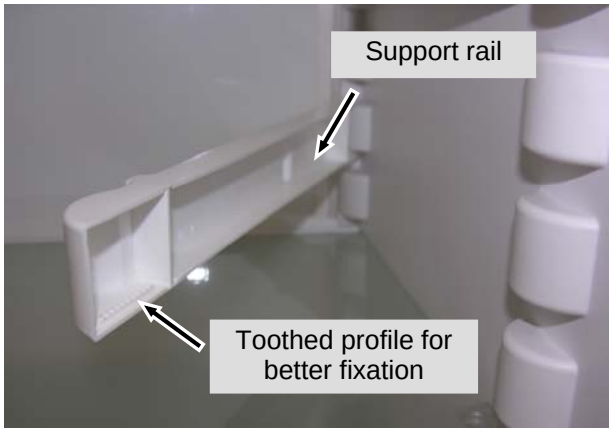


Fig. 5.2.6 / 1

Fig. 5.2.6 / 2

5.3 Freezer compartment

5.3.1 Air sensor, evaporator module and fan module

Air sensor: Engaged in sensor holder on air duct cover.

Evaporator module:
- Remove drawers and glass shelves in freezer compartment.
- Disengage air sensor.
- Undo the screws marked in **Fig. 5.3.1/ 1**and remove the rear wall.
- Lift the evaporator module to swing it out in a forward direction.

Fan module: Unscrew the marked screws (Fig. **5.3.1/ 3**) on the light housing.

Fig. 5.3.1/ 1 Freezer compartment with air duct

Fig. 5.3.1/ 2 Unlocking IceMaker (only ICN 3066)

Fig. 5.3.1 / 3 Fan module

5.3.2 Temperature fuse, evaporator sensor and defrost heater

Temperature fuse: The temperature fuse can be replaced separately with a conversion kit.
The conversion kit comprises:
- 1 temperature fuse
- 2 compression connectors
- 2 shrinkdown tubings

Please note:
Always attach the compression connector to the red and blue lines of the temperature fuse. As soon as the white line of the defrost heater is cut, the defrost heater is destroyed.

Evaporator sensor:
- Remove cover plate by cutting the adhesive tapes at the right and left.
- Draw the evaporator sensor to the right, out of the lamellar evaporator.

Defrost heater: Is clipped into the evaporator fins. Can be replaced if defective.

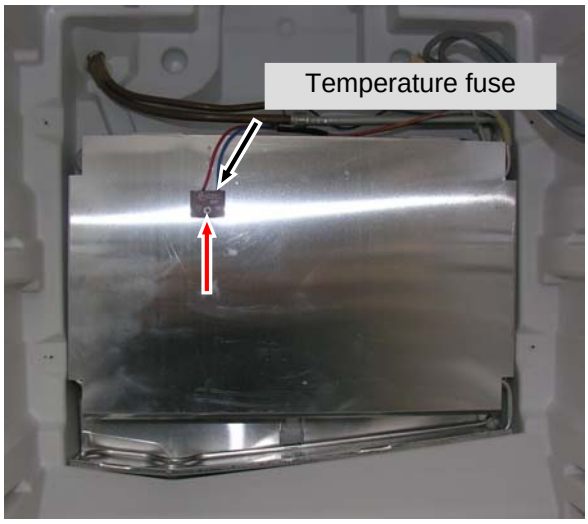


Fig. 5.3.2/ 1 Evaporator module

Fig. 5.3.2/ 2 Cutting adhesive tape

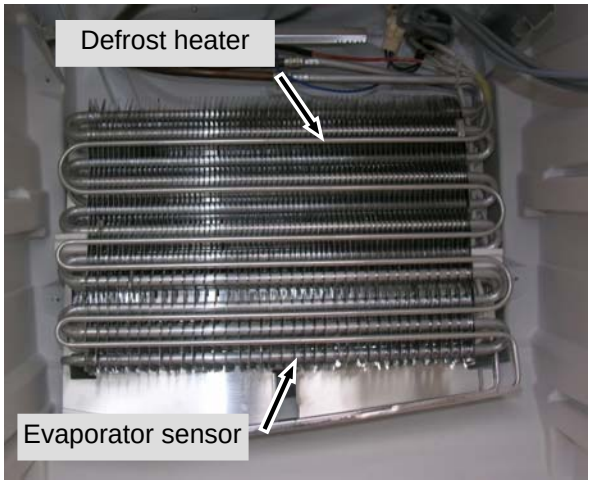


Fig. 5.3.2/ 3 Evaporator sensor, defrost heater

5.3.3 Fan and reed PCB

Reed PCB:

- Disengage cover of reed PCB (see **Fig. 5.3.3/ 2**).
- Disconnect Reed PCB.
  → Note mounting direction of reed PCB. Reed relay points forwards.

Fan:

- Disconnect Reed PCB.
- Extricate cable from fan module.
- Open retaining clip for cable.
- Disconnect fan cable.
- Remove fan module
- Remove fan vanes.
- Remove fan from holder.

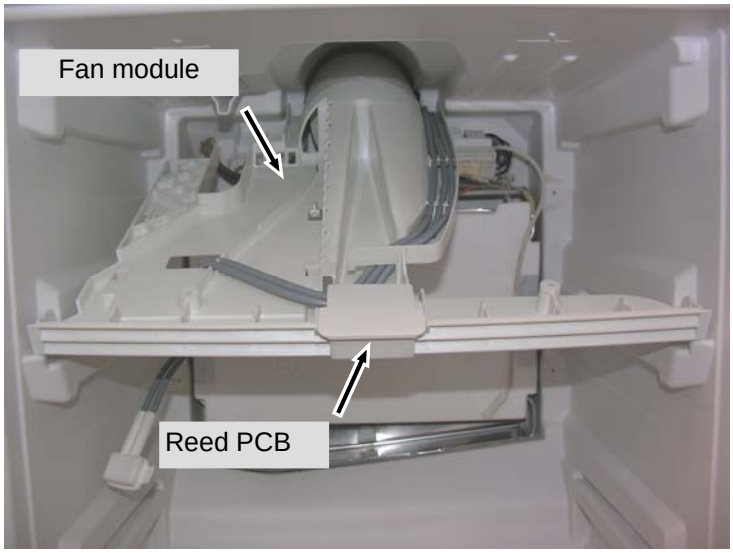
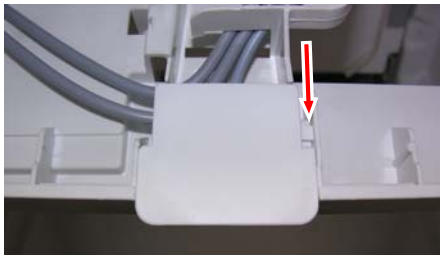


Fig. 5.3.3/ 1 Fan module with reed PCB



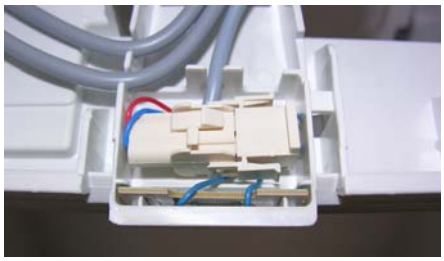


Fig. 5.3.3/ 2 Reed PCB

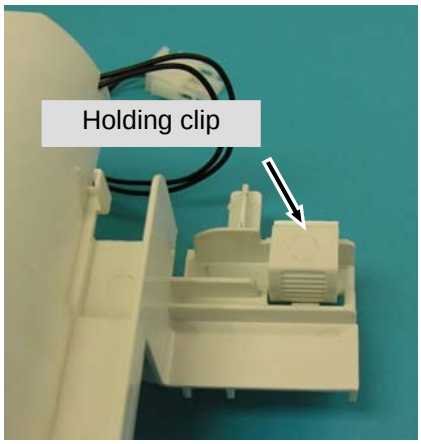


Fig. 5.3.3 / 3

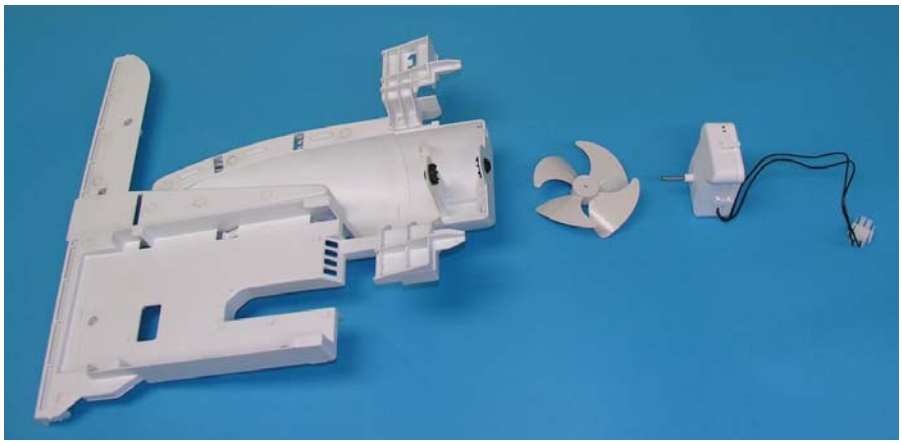


Fig. 5.3.3 / 4 Fan

5.3.4 Only ICN 3066, Double solenoid valve IceMaker

Solenoid valve

- Undo marked screw (see **Fig. 5.3.4/ 1**).
- Remove cover.

Fig. 5.3.4 / 1

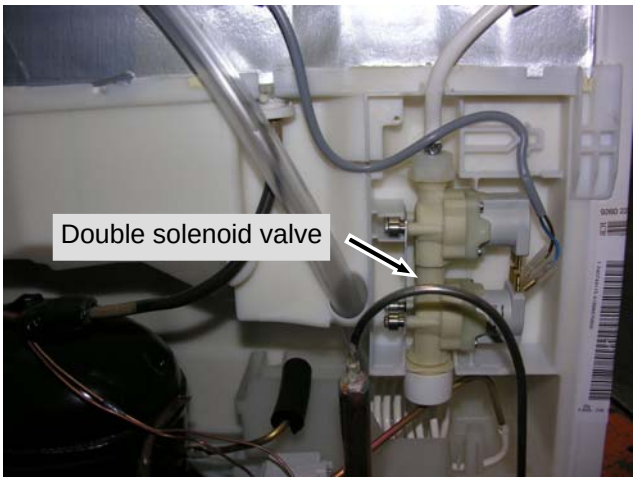


Fig. 5.3.4 / 2

6.0 Technical data

6.1 General

Sensor values:

Refrigerator compartment: Air and evaporator sensor
Freezer compartment: Air sensor and evaporator sensor

Temperature °C	Resistance value kOhm
+35	3.1
+30	3.8
+25	4.7
+20	5.9
+15	7.3
+10	9.3
+5	11.9
0	15.3
-5	19.8
-10	25.9
-15	34.1
-20	45.3
-25	60.8
-30	82.3
-35	112.8

6.2 Refrigerator compartment

Interior light:	Wattage:	3 watts
	Voltage:	10 volts/DC (voltage applied to connector with disconnected LED lighting unit is approx. 16V/DC).
Fan:	Wattage:	5.8 watts
	Voltage:	230 volts/AC

6.3 Freezer compartment

Fan:	Wattage:	1.9 watts
	Voltage:	230 volts/AC
Defrost heater:	Wattage:	136 watts
	Voltage:	230 volts/AC
Temperature fuse:	Trip temperature:	+93°C (Is faulty after tripping and has to be replaced)

7.0 Service menu

The service menu may be used only by customer service technicians.

7.1 Manual defrosting "H"

Step	Display	Operation	Display following operation	Testing option / Info
Service menu start				
1	Actual value	Press “On/Off” and "SuperFrost" simultaneously for 3 seconds.	"H" flashes at the same time as the SuperFrost and SuperCool LED	Service menu active
2	"H" flashes at the same time as the SuperFrost and SuperCool LED	Press "SuperFrost"	Refrigerator compartment: +5°C Freezer compartment: "A" flashes	**Manual defrost activated**
Manual defrost automatically stopped. Manual defrost can be ended prematurely by switching the freezer compartment off and back on again.				

7.2 Demo mode ”d0/d1“

Step	Display	Operation	Display following operation	Testing option / Info
Service menu start				
1	Actual value	Press “On/Off” and "SuperFrost" simultaneously for 3 seconds.	"H" flashes at the same time as the SuperFrost and SuperCool LED	Service menu active
2	"H" flashes at the same time as the SuperFrost and SuperCool LED	Press "Up" once	"d1" or "d0" flash at the same time as SuperFrost and SuperCool LED	Service menu active. Stepwise demo mode
2a	**d1**	Press "SuperFrost"	Set value	**Demo mode On**
2b	**d0**	Press "SuperFrost"	Set value	**Demo mode Off**
Demo mode (Demo mode can be deactivated only via service menu, not by “Off/On”.) **Operation switches to the mode wanted, demo mode or normal mode, as soon as "SuperFrost" has been actuated.**				

7.3 Service mode "L"

Step	Display	Operation	Display following operation	Testing option / Info
Service menu start				
1	Actual value	Press “On/Off” and "Superfrost" simultaneously for 3 seconds.	"H" flashes at the same time as the SuperFrost and SuperCool LED	Service menu active
Service mode -- test display LED, door contact, potentiometer --				
1	"H" flashes at the same time as the SuperFrost and SuperCool LED	Press "Up" twice	„L“ flashes at the same time as SuperFrost and SuperCool LED	Service mode selected
2	„L“ flashes at the same time as SuperFrost and SuperCool LED	Press "SuperFrost"	"rd" flashes	Service mode activated
3	"rd" flashes	Doors open and closed	All button LEDs and display segments shine	Door contact, LEDs, display
4	All button LEDs and display segments shine	Press all the buttons one after the other.	"L0" shines	Button actuation is confirmed by beep
After step 4, actuation of the last button, a beep sounds.				
Service mode -- testing electric loads--				
5	"L0" shines	No operation	"**L0**" shines	**All OFF**
6	"L0" shines	Press "Up"	"**L1"** shines	**- Compressor On**, **- Solenoid valve** position **B**
7	"L1" shines	Press "Up"	"**L2"** shines	**- Compressor on,** **- Solenoid valve** position **A**
8	"L2" shines	Press "Up"	„**L3**“ shines	**Freezer compartment fan On**
9	"L3" shines	Press "Up"	"**L4**" shines	**Freezer compartment defrost heater On**
10	"L4" shines	Press "Up"	"**L5"** shines	**Light On**
11	"L5" shines	Press "Up"	"**L7"** shines	**Refrigerator compartment fan On**
End	Press "On/Off"			

7.4 Sensor test (temperature display) and door contact test "E"

Step	Display	Operation	Display following operation	Testing option / Info
Service menu start				
1	Actual value	Press “On/Off” and "SuperFrost" simultaneously for 3 seconds.	"H" flashes at the same time as the SuperFrost and SuperCool LED	Service menu active
Sensor test and door contact test (sensor values without offset, appliance in service mode)				
1	"H" flashes at the same time as the SuperFrost and SuperCool LED	Press "Up" three times	„E“ flashes at the same time as SuperFrost and SuperCool LED	Sensor test mode selected
2	„E“ flashes at the same time as SuperFrost and SuperCool LED	Press "Up"	"**E1"** flashes alternately with sensor temperature	**Refrigerator compartment air sensor**
3	"E1" flashes alternately with sensor temperature	Press "Up"	"**E2**" flashes alternately with sensor temperature	**Evaporator sensor for refrigerator compartment**
4	"E2" flashes alternately with sensor temperature	Press "Up"	"**E3"** flashes alternately with sensor temperature	**Freezer compartment air sensor**
5	"E3" flashes alternately with sensor temperature	Press "Up"	„**E4**“ flashes alternately with sensor temperature	**Freezer compartment evaporator sensor**
6	"E4" flashes alternately with sensor temperature	Press "Up"	„**E8**“ flashes alternately with "0" or "1"	**Door contact freezer compartment** (0 = door closed, 1 = door open)
7	„E8“ flashes alternately with "0" or "1"	Press "Up"	"**E9"** flashes alternately with "0" or "1"	**Door contact refrigerator compartment** (0 = door closed, 1 = door open)
End	Press “On/Off“ twice			

8.0 Error code, troubleshooting

8.1 Error code table

Error code	Defective component	Emergency operation
F1	Refrigerator compartment air sensor	Compressor 10 minutes ON and 40 minutes OFF.
F2	Refrigerator compartment evaporator sensor	Compressor 10 minutes ON and 40 minutes OFF.
F3	Freezer compartment air sensor	Compressor endurance run
F4	Evaporator sensor, freezer compartment	Compressor endurance run